

What is claimed is:

1. A dialysis machine comprising:
  - a dialyzer subdivided by a semipermeable membrane into a chamber for a liquid to be purified and a dialysis fluid chamber;
  - a dialysis fluid inlet line leading to an inlet of the dialysis fluid chamber;
  - a dialysis fluid outlet line leading away from an outlet of the dialysis fluid chamber;
  - a balancing system connected to the dialysis fluid inlet and outlet lines for balancing fresh and spent dialysis fluid; and
  - a proportioning device for supplying fresh dialysis fluid, the proportioning device comprising:
    - a water source;
    - at least one proportioning unit having a first chamber half and second chamber half configured to operate so that liquid is displaced from one chamber half when the other chamber half is filled with liquid;
    - an inlet line leading from the water source, the inlet line connected to an inlet of the first chamber half and an inlet the second chamber half, and an outlet line connected to an outlet of the first chamber half and an outlet of the second chamber half, so that the chamber halves can be alternately filled and emptied;
    - at least one mixing point provided in at least one of the inlet line and the outlet line;
    - at least one dialysis fluid concentrate source for supplying a fluid concentrate to the at least one mixing point for forming a fresh dialysis fluid; and
    - an equalizing chamber for the fresh dialysis fluid, the equalizing chamber connected to the outlet line.
2. The dialysis machine according to claim 1, wherein one mixing point is provided in the inlet line, and at least one mixing point is provided in the outlet line.
3. The dialysis machine according to claim 1, wherein the inlet line has a first inlet branch in fluid communication with the inlet of the first chamber half and a second inlet branch in fluid communication with the inlet of the second chamber half, and wherein the outlet line has a first outlet branch in fluid communication with the outlet of the first chamber half and a second outlet branch in fluid communication with the outlet of the second chamber

half, the machine further comprising a cutoff element provided in each of the first inlet branch, second inlet branch, first outlet branch, and second outlet branch.

4. The dialysis machine according to claim 3, wherein the equalizing chamber further comprises:

a liquid level indicator; and

a control unit to control the cutoff elements after a liquid level drops below a predetermined setpoint so that the proportioning unit is switched.

5. The dialysis machine according to claim 1, wherein the equalizing chamber further comprises:

an outlet connected to a supply line;

a first inlet connected to the outlet line; and

a second inlet connected to a recirculation line branching off from the supply line.

6. The dialysis machine according to claim 5, further comprising:

a pressure relief valve connected to the recirculation line.

7. The dialysis machine according to claim 5, further comprising:

a vent pipe in the equalizing chamber.

8. The dialysis machine according to claim 1, wherein the at least one dialysis fluid concentrate source comprises a first concentrate container for holding a first concentrate, the first concentrate container in fluid connection with a first concentrate line in fluid communication with a first mixing point in the outlet line upstream from the proportioning unit.

9. The dialysis machine according to claim 8, wherein the at least one dialysis fluid concentrate source further comprises a second container for holding a second concentrate, the second concentrate container in fluid connection with a second concentrate line in fluid communication with a second mixing point in the outlet line downstream from the proportioning unit.

10. The dialysis machine according to claim 9, wherein the at least one dialysis fluid concentrate source further comprises a third container for holding a third concentrate, the third concentrate container in fluid connection with a third concentrate line in fluid communication with a third mixing point in the outlet line downstream from the second mixing point.
11. The dialysis machine according to claim 10, wherein proportioning pumps are connected to at least one of the first concentrate line, second concentrate line, and third concentrate line for adjusting the volume of the dialysis fluid concentrate.
12. The dialysis machine according to claim 1, wherein at least one conductivity sensor is provided for measuring the conductivity of a mixture of the water and the dialysis fluid concentrate downstream from a mixing point.
13. The dialysis machine according to claim 1, further comprising:  
at least one of a degassing and a heating unit connected to the inlet line.
14. A method of operating a dialysis machine, comprising the steps of:  
sending fresh dialysis fluid to a dialysis fluid chamber of a dialyzer, the chamber divided by a semipermeable membrane into the dialysis fluid chamber and a chamber for the liquid to be purified;  
removing dialysis fluid from the dialysis fluid chamber; and  
balancing spent and fresh dialysis fluid in a balancing system whereby the fresh dialysis fluid is prepared by:  
filling alternately a first and a second chamber half of at least one proportioning unit with at least one of water and a mixture of water and at least one dialysis fluid concentrate;  
discarding a liquid from the other chamber half;  
adding at least one dialysis fluid concentrate to the liquid discarded from the other chamber half and a liquid supplied to the chamber to prepare the fresh dialysis fluid;  
collecting the fresh dialysis fluid before the fresh dialysis fluid is sent to the dialysis fluid chamber.

15. The method according to claim 14, further comprising the steps of:  
collecting the fresh dialysis fluid in an equalizing chamber in which the liquid level is monitored; and  
switching the proportioning unit until the liquid level is again above the setpoint after the liquid level drops below a predetermined setpoint.
16. The method according to claim 15, further comprising the steps of:  
removing the dialysis fluid from the equalizing chamber; and  
returning a portion of the liquid to the equalizing chamber.
17. The method according to claim 15, further comprising the step of:  
degassing the dialysis fluid in the equalizing chamber.
18. The method according to claim 14, further comprising the steps of:  
degassing at least one of the water and the mixture of the water and the dialysis fluid before at least one of the water and the mixture of the water and the dialysis fluid enter the proportioning unit.
19. The method according to claim 14, further comprising the step of:  
heating the at least one of the water and the mixture of the water and the dialysis fluid before at least one of the water and the mixture of the water and the dialysis fluid enter the proportioning unit.
20. The method according to claim 14, further comprising the step of:  
measuring the composition of the mixture of water and the at least one dialysis fluid concentrate by determining the conductivity of the mixture downstream from a mixing point.